

# **Data Storing In DNA**

## **SEMINAR REPORT**

**Submitted in the partial fulfillment of the requirements for the award of degree in**  
**BACHELOR OF SCIENCE IN COMPUTER SCIENCE**

**Submitted By,**

**Athul Sagar**

**210021028220**

**SEMESTER VI**



**SWAMY SASWATHIKANANDA COLLEGE**  
**POOTHOTTA**

**(Affiliated to Mahatma Gandhi University)**

**2024**

# SWAMY SASWATHIKANANDA COLLEGE POOTHOTTA

(Affiliated to Mahatma Gandhi University)



## CERTIFICATE

This is to certify that the seminar entitled **Data Storing In DNA** submitted in partial fulfillment of the requirements for the award of the degree in BACHELOR OF SCIENCE IN COMPUTER SCIENCE is a bonafide report of the seminar done by **Athul Sagar Reg no: 210021028220** during the academic year 2023-2024.

**Internal Guide**

**Head of the department**

**Examiners:**

1.....

2.....

**College Seal**

**Department Seal**

## **DECLARATION**

I hereby declare that this seminar work entitled **Data Storing In DNA** is a record of the original work done by me under the guidance of **Mr. Johney John, Assistant Professor**, Department of Computer Sciences, **SWAMY SASWATHIKANANDA COLLEGE**, and the seminar work has not formed the basis for the award of any Degree/Diploma or similar title to any candidate of University.

**Internal Guide:**

**Name and Signature of the candidate**

**Mr. Johney John**

**Athul Sagar**

## **ACKNOWLEDGEMENT**

At the outset, I thank God Almighty for making the endeavor a success.

I express my gratitude to **Prof. K.S. ULLAS** the principal of **SWAMY SASWATHIKANANDA COLLEGE, POOTHOTTA** for providing me with adequate facilities, ways and means by which I was able to complete the seminar work.

I express my sincere thanks to **Assoc. Professor Ms. BINDU MOHAN**, Head of the Department of Computer Sciences, and my seminar coordinator and my seminar guide **Mr. JOHNEY JOHN**.

who has been showing deep interest in my seminar and inspired me through development by valuable suggestions, and all the faculty members of the department of Computer Science for their sincere help and support.

Last but not the least, I also express my profound gratitude to all other members of the faculty and well-wishers who assisted me in various occasions during the seminar work.

# INDEX

<b>Abstract.....</b>	<b>1</b>
Brief overview of the topic	
Importance of storing data in DNA	
Key findings and advancements in the field	
<b>1. Chapter 1: Introduction.....</b>	<b>3</b>
1.1 Background	
1.2 Motivation	
1.3 Objectives	
<b>2. Chapter 2: Basics of DNA .....</b>	<b>11</b>
2.1 Molecular structure of DNA	
2.2 DNA as a storage medium	
2.3 Encoding information in DNA	
<b>3. Chapter 3: DNA Data Storage Techniques .....</b>	<b>16</b>
3.1 Overview of encoding techniques	
3.2 Writing data to DNA	
3.3 Reading data from DNA	
<b>4. Chapter 4: Challenges in DNA Data Storage .....</b>	<b>26</b>
4.1 Technical challenges	
4.2 Ethical and societal challenges	
4.3 Future prospects and ongoing research	
<b>5. Chapter 5: Applications of DNA Data Storage.....</b>	<b>31</b>
5.1 Archival storage	
5.2 Big data and cloud computing	

5.3 Bioinformatics and healthcare

<b>6.Chapter 6: Conclusion.....</b>	<b>34</b>
<b>7.References.....</b>	<b>35</b>